

2019 MBSS Habitat Assessment Certification Training



Howard Community College May 28, 2019

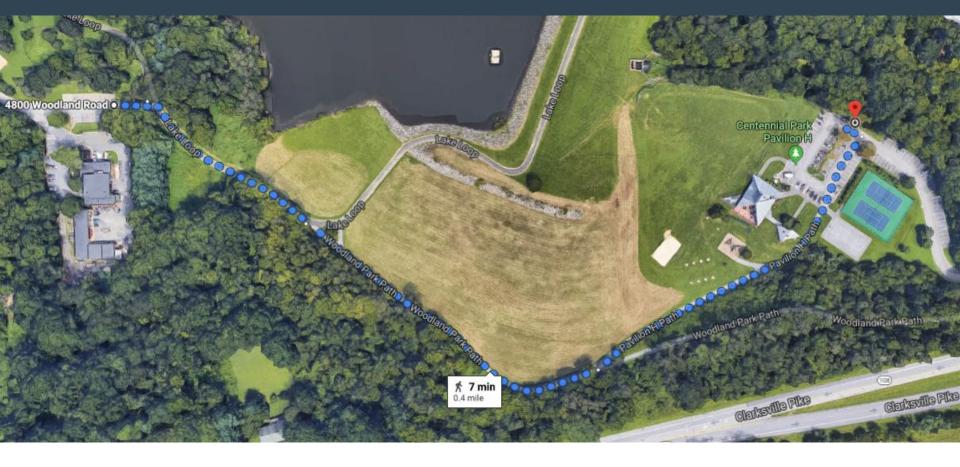




What's required for Certification?

- 1. Attend THIS protocol presentation
- Attend field demo/training of habitat assessment protocols
 10:15 this morning
- 3. Take and PASS the written test 11:30 this morning
- On you own: visit the habitat assessment audit site and score habitat anytime between this afternoon and Thursday evening.
 - Turn your assessment in to Jono, Jay, or Jason to be graded in front of you by 8am Friday morning. Early submissions appreciated
 - "Correct" answers determined by consensus within MBSS group
- No one will fail the audit component in 2019!
 - But you must pass the written test (90%) and complete the field audit





Email with link to directions will be sent to the entire MBSS training group later this morning





Midpoint of audit site from left bank – Howard Co. park land *Private property on RB beyond sewer line ROW

- Please do not venture beyond sewer line ROW on RB





COMMENTS:

MBSS SPRING HABITAT DATA SHEET Rup at			
SITE STEEN Moth Copy Segment Type Year Reviewer: / Second	1	MBSS Habitat Certification	on Data Sheet
DATE Month Copy			
Dist. from Nearrest Road to Site (m) (bioring upstream) Trash Rating 0 - 20 LEFT BANK RIGHT BANK	APPLICANT:	ORGANIZATION:	DATE:
LANDUSE (YN) With (Som mad) Agi, Land Cover	BANK EROSION	HABITAT ASSESSMENT	RIPARIAN VEGETATION
Old Field Residential Personal Commercial/Industrial User Type Commercial/Industrial Conference Forest Corpland Buffer Breaks (1/N)	Left Bank Right Bank Extent (m)	1. Instream Habitat (0-20)	(facing upstream)
Wellard Pasture BUFFER BREAKS Surface Mine Orchard/VineyardNursery Landfill Golf Course LEFT BANK RIGHT BANK	Severity	2. Epifaunal Substrate (0-20)	LEFT BANK RIGHT BANK
ROAD CULVERT STREAM GRADIENT The Drain Location (m) Height (m) Impers Drainage	0 = none 1 = min 2 = mod 3 = severe	3. Velocity/Depth Diversity (0-20)	Width (50m max)
Present in Segment? (YN)	Average Height (m)	Pool/Glide/Eddy Quality (0-20)	Adjacent Land Cover
SampleAble (* (N) Pichare Width of Colvert (n) 2 Quilly	BAR FORMATION &	Extent (m)·····	Vegetation Type
Length of Colvert (inc) Dirt Road Grawel R	SUBSTRATE	5. Riffle/Run Quality (0-20)·····	Buffer Breaks (Y/N)
Railroad Buffer Break Types (M = Mnnor, S = Severe)	Severity		LEFT BANK RIGHT BANK
CHANNELIZATION Evidence of Channel Straightening of Designing (This Type Extribut) pip Fig. 1. Straightening of Designing (This Type Channel Straightening of Designing) Fig. 2. Straightening of Designing (This Type Channel Straightening of Designing) Fig. 2. Straightening of Designing (This Type Channel Straightening of Designing (This	2 = mod Sand 3 = severe Silt/Cla	1852	Storm Drain Tile Drain
LEFT BANK BOTTOM RIGHT BANK Long		1 CHARACTER	Impervious Drainage Gully
Rp Sup Earlien Bern Stock Ht (m) Stream Stock Ht (m)		Present E = Extensive	Orchard Crop
Drodge Spot Of Channel Peo Culent	Braided	Gravel Boulder >2m	Pasture
*2214 MBSS SUMMER HABITAT DATA SHEET No	Riffle	Sand Boulder <2m	Dirt Road Gravel Road
SITE Witherhold Code Degreet Type Year Reviewer: Fry Second	Run/Glide	Silt/Clay Beaver Pond	Raw Sewage Railroad
BANK EROSION HABITAT ASSESSMENT FLOW Cough leads FLOW Cough leads Flow	Deep Pool (>= 0.5m) Shallow Pool (< 0.5m)	Cobble Overhead Cover Bedrock Undercut Bank	Buffer Break Types (M = minor; S = severe)
Exident (in)		Orange Floc	(M = IIIIIO, S = Severe)
	Maximum Depth (cm)		
BAR FORMATION & S. RiffelPun Quality (5-20)	Woody Debris	CHAN	NELIZATION
Search	No. of Instream Woody Det	Evidence of	of Channel Straightening or Dredging (Y/N)
STREAM CHARACTER	No. of Dewatered Woody D	1112	EXTENT (m) T BANK BOTTOM RIGHT BANK
Braided Cravel Boulder >2m Refile Sand Boulder <2m	No. of Instream Rootwads	Concrete	I I I I I
Rua/Glide Sit/Clay Beaver Pond Deep Pool (~= 0.5m) Cobble Overhead Cover	No. of Dewatered Rootwad		
Stallow Pool (< 0.5m) Bedrock Undercal Bank Orange Roc	COMMENTS:	Rip-Rap Earthen Berm	N/A
A = Absent P = Present E = Extensive Alternative Flow Maximum Depth (cm) Alternative Flow Maximum Depth (cm)		Dredge Spoil Off Channel	N/A
No. of Frakham Woody Debris Widted Todaway Dobardy Widtel Debris (Inc.) No. of Environt Woody Calent	<u>a</u>	Pipe Culvert	
No. of Instrum Robads Well (Mc) 1 Time (Mc) 1			
No. of Dewatered Rooksads			MARV AND



MBSS Habitat Certification Data Sheet

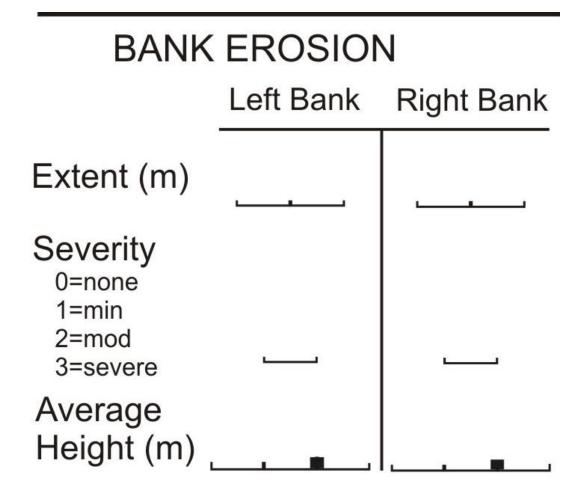
APPLICANT:	ORGANIZATION:	DATE:
BANK EROSION Left Bank Right Bank Extent (m) Severity 0 - none 1 - min 2 - mod 3 - severe	HABITAT ASSESSMENT	RIPARIAN VEGETATION (facing upstream) LEFT BANK RIGHT BAN Width (50m max)
BAR FORMATION & SUBSTRATE Severity 0 - none 1 - min 2 - mod 3 - severe Severe	Extent (m)	Vegetation Type Buffer Breaks (Y/N) LEFT BANK RIGHT BAY Storm Drain Tile Drain Impervious Drainage
	HARACTER resent E = Extensive Gravel Boulder >2m Sand Boulder <2m Beaver Pond Cobble Overhead Cov Bedrock Undercut Bank Orange Floc	Buffer Break Types
Woody Debris No. of Instream Woody Debris No. of Dewatered Woody Debri No. of Instream Rootwads No. of Dewatered Rootwads COMMENTS:	Evidence TYPE	EXTENT (m) EFT BANK BOTTOM RIGHT BANK N/A N/A

MBSS Habitat Certification

- Bank Erosion
- Bar Formation
- Habitat Assessment
- Stream Character
- Woody Debris
- Riparian Vegetation
- Channelization

















No bank erosion

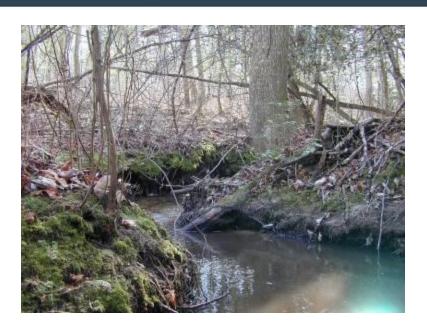
Extent = 0

Severity = 0 (none)

Average Height = 0









Minimum bank erosion

Extent = 10 m

Severity = 1

Average Height = 0.2 m









Moderate bank erosion

Extent = 40 m

Severity = 2

Average Height = 0.6 m











Severe bank erosion

Extent = 75 m

Severity = 3

Average Height = 2 m





APPLICANT:	OF	RGANIZATION:		DATE:_	
BANK EROSION Left Bank Right Bank Extent (m)	1. Instream Habita	AT ASSESSMENT]	ARIAN VEGETA (facing upstream)	ATION
STREA	3. Velocity/Depth I 4. Pool/Glide/Eddy Extent (m 5. Riffle/Run Quali extent (m 6. Embeddedness d 7. Shading (%)		Width (50m max) Adjacent Land Cover Vegetation Type		ik Types
Woody Debris No. of Instream Woody I	75559,000	Evidence of	NELIZATION of Channel Straightening	g or Dredging (Y/N)
No. of Dewatered Wood No. of Instream Rootwar No. of Dewatered Rootw	ds	Concrete Gabion Rip-Rap	EXTENT BANK BOTTOM	(m) RIGHT BANK	
COMMENTS:	Dredge Sp	Earthen Berm poil Off Channel Pipe Culvert	N/A N/A		

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
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BAR FORMATION & SUBSTRATE Cobble Severity 0=none Gravel 1=min 2=mod Sand 3=extensive Silt/Clay

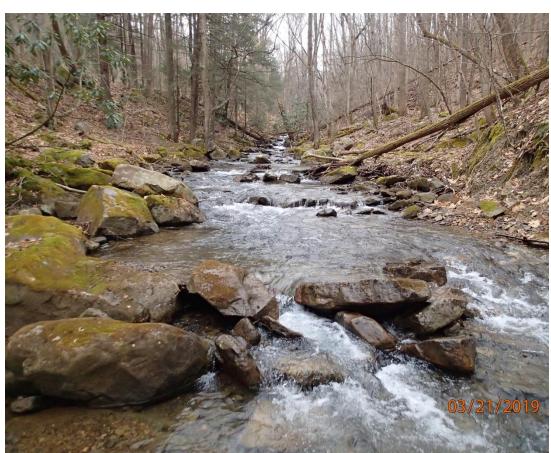
Characterize most dominant substrate type











Bar Formation = None







Bar Formation = Minor (Sand, Gravel)







Bar Formation = Moderate (Sand, Silt/Clay)







Bar Formation = Extensive (Cobble, Gravel, Sand, Silt/Clay)





MBSS Habitat Certification Data Sheet

APPLICANT:	OI	RGANIZATION:		DATE:
BANK EROSION Left Bank Right Extent (m)	1. Instream Habita	TAT ASSESSMENT at (0-20)	(fi	RIAN VEGETATION acing upstream)
0 - none	3. Velocity/Depth 4. Pool/Glide/Edd Extent (n	Diversity (0-20)	Width (50m max) Adjacent Land Cover Vegetation Type	EFT BANK RIGHT BAI
G - none G 1 - min S 3 - severe S	5. Riffle/Run Qual		Storm Drain Tile Drain Impervious Drainage Gully	EFT BANK RIGHT BA
A = Absent Braided Riffle Run/Glide Deep Pool (>= 0.5m) Shallow Pool (< 0.5m) Maximum Depth (cm)	Gravel Sand Silt/Clay Cobble Bedrock	Boulder >2m Boulder <2m Boulder <2m Beaver Pond Overhead Cover Undercut Bank Orange Floc	Orchard Crop Pasture New Construction Dit Road Gravel Road Raw Sewage Railroad	Buffer Break Types (M = minor; S = severe)
Woody Debris No. of Instream Wood	y Debris		IELIZATION Channel Straightening of	or Dredging (Y/N)
No. of Dewatered Woo	10	TYPE LEFT 8	EXTENT (n	RIGHT BANK
No. of Dewatered Roc	vitwads	Gabion Rip-Rap		
COMMENTS:	Dredge S	Earthen Berm poil Off Channel Pipe Culvert	N/A N/A	

MBSS Summer Habitat Data Sheet

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HABITAT ASSESSMENT
1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)·····
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
Extent (m)
5. Riffle/Run Quality (0-20)·····
Extent (m)
6. Embeddedness (%) · · · · · · ·
7. Shading (%)





Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
I. Instream Habitat ^(a)	Greater than 50% of a variety of cobble, boulder, submerged logs, undercut banks, snags, rootwads, aquatic plants, or other stable habitat	30-50% of stable habitat. Adequate habitat	10-30% mix of stable habitat. Habitat availability less than desirable	Less than 10% stable habitat. Lack of habi- tat is obvious
2. Epifaunal Substrate ^(b)	Preferred substrate abundant, stable, and at full colonization potential (riffles well developed and dominated by cobble; and/or woody debris prevalent, not new, and not transient)	Abund. of cobble with gravel &/or boulders common; or woody de-bris, aquatic veg., undercut banks, or other pro-ductive surfaces common but not prevalent /suited for full colonization	Large boulders and/or bedrock prevalent; cobble, woody debris, or other preferred surfaces uncommon	Stable substrate lacking; or particles are over 75% surrounded by fine sediment or flocculent material
3. Velocity/Depth Diversity ^(c)	Slow (<0.3 m/s), deep (>0.5 m); slow, shallow (<0.5 m); fast (>0.3 m/s), deep; fast, shallow habitats all present	Only 3 of the 4 habitat categories present	Only 2 of the 4 habitat categories present	Dominated by 1 velocity/depth category (usually pools)
I. Pool/Glide/Eddy Quality ^(d)	Complex cover/&/or depth > 1.5 m; both deep (> .5 m)/shallows (< .2 m) present	Deep (>0.5 m) areas present; but only moderate cover	Shallows (<0.2 m) prevalent in pool/glide/eddy habitat; little cover	Max depth <0.2 m in pool/glide/eddy habitat; or absent completely
5. Riffle/Run Quality ^(a)	Riffle/run depth generally >10 cm, with maximum depth greater than 50 cm (maximum score); substrate stable (e.g. cobble, boulder) & variety of current velocities	Riffle/run depth generally 5-10 cm, variety of current velocities	Riffle/run depth generally 1-5 cm; primarily a single current velocity	Riffle/run depth < 1 cm; or riffle/run substrates concreted
5. Embeddedness ^(f)	Percentage that gravel, flocculent material.	cobble, and boulder part	ticles are surrounded by	line sediment or

* Use to answer certification test questions





Instream Habitat - Habitat quality as it relates to fishes

Habitat Parameter	Optimal	Sub-Optimal	Marginal	Poor
	16-20	11-15	6-10	0-5
1. Instream Habitat ^(a)	Greater than 50% of a variety of cobble, boulder, submerged logs, undercut banks, snags, rootwads, aquatic plants, or other stable habitat	30-50% of stable habitat. Adequate habitat	10-30% mix of stable habitat. Habitat availability less than desirable	Less than 10% stable habitat. Lack of habitat tat is obvious





Instream Habitat



93/19/2018

Optimal 16-20

Greater than 50% of a variety of cobble, boulder, submerged logs, undercut banks, snags, rootwads, aquatic plants, or other stable habitat

Score = 20

Sub-Optimal 11-15

30-50% of stable habitat. Adequate habitat

Score = 14





Instream Habitat



Marginal 6-10

10-30% mix of stable habitat. Habitat availability less than desirable Score = 8

Poor 0-5

Less than 10% stable habitat. Lack of habitat is obvious

Score = 4





Epifaunal Substrate - Habitat quality as it relates to benthic macroinvertebrates

MBSS Stream Habitat Assessment Guidance Sheet Optimal Sub-Optimal Marginal Poor							
Habitat Parameter	16-20	11-15	6-10	0-5			
2. Epifaunal Substrate ^(b)	Preferred substrate abundant, stable, and at full colonization potential (riffles well developed and dominated by cobble; and/or woody debris prevalent, not new, and not transient)	Abund. of cobble with gravel &/or boulders common; or woody de-bris, aquatic veg., under- cut banks, or other pro-ductive surfaces common but not prevalent /suited for full colonization	Large boulders and/or bedrock prevalent; cobble, woody debris, or other preferred surfaces uncommon	Stable substrate lacking; or particles are over 75% surrounded by fine sediment or flocculent material			





Epifaunal Substrate





Preferred substrate abundant, stable, and at full colonization potential (riffles well developed and dominated by cobble; and/or woody debris prevalent, not new, and not transient)

Optimal

Score = 19

Abund. of cobble with gravel &/or boulders common; or woody de-bris, aquatic veg., undercut banks, or other pro-ductive surfaces common but not prevalent /suited for full colonization

Sub-optimal Score = 14





Epifaunal Substrate



Large boulders and/or bedrock prevalent; cobble, woody debris, or other preferred surfaces uncommon

Marginal Score = 8



Stable substrate lacking; or particles are over 75% surrounded by fine sediment or flocculent material

Poor Score = 2





Velocity/Depth Diversity – Based on the variety of velocity/depth regimes present at a site

MBSS Stream Habitat Assessment Guidance Sheet					
Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5	
3. Velocity/Depth Diversity ^(c)	Slow (<0.3 m/s), deep (>0.5 m); slow, shallow (<0.5 m); fast (>0.3 m/s), deep; fast, shallow habitats all present	Only 3 of the 4 habitat categories present	Only 2 of the 4 habitat categories present	Dominated by 1 ve- locity/depth category (usually pools)	





Pool/Glide/Eddy Quality – Based on the depth and spatial complexity of slow water habitat present at site

MB	SS Stream Hab	itat Assessme	nt Guidance Sh	eet
Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
4. Pool/Glide/Eddy Quality ^(d)	Complex cover/&/or depth > 1.5 m; both deep (> .5 m)/shallows (< .2 m) present	Deep (>0.5 m) areas present; but only moderate cover	Shallows (<0.2 m) prevalent in pool/glide/eddy habitat; little cover	Max depth <0.2 m in pool/glide/eddy habitat; or absent completely





Riffle/Run Quality – Based on the depth, complexity, and functional importance of riffle/run habitat present at site

Habitat Parameter	Optimal	Sub-Optimal	Marginal	Poor
	16-20	11-15	6-10	0-5
5. Riffle/Run Quality ^(e)	Riffle/run depth generally >10 cm, with maximum depth greater than 50 cm (maximum score); substrate stable (e.g. cobble, boulder) & variety of current velocities	Riffle/run depth generally 5-10 cm, variety of current velocities	Riffle/run depth generally 1-5 cm; primarily a single current velocity	Riffle/run depth < 1 cm; or riffle/run substrates concreted





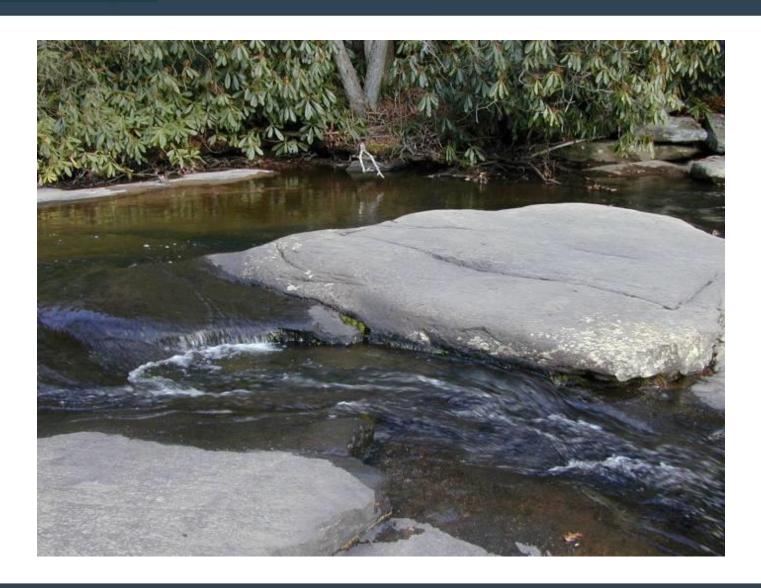
Embeddedness – Measured at fastest flowing section in the 75 m site

6.	Embeddedness ^(f)	Percentage that gravel, cobble, and boulder particles are surrounded by line sediment or	1
		flocculent material.	

- * Measure embeddedness in fastest flowing areas in the site
 - if no riffle within 75m site, riffle near the site can be used







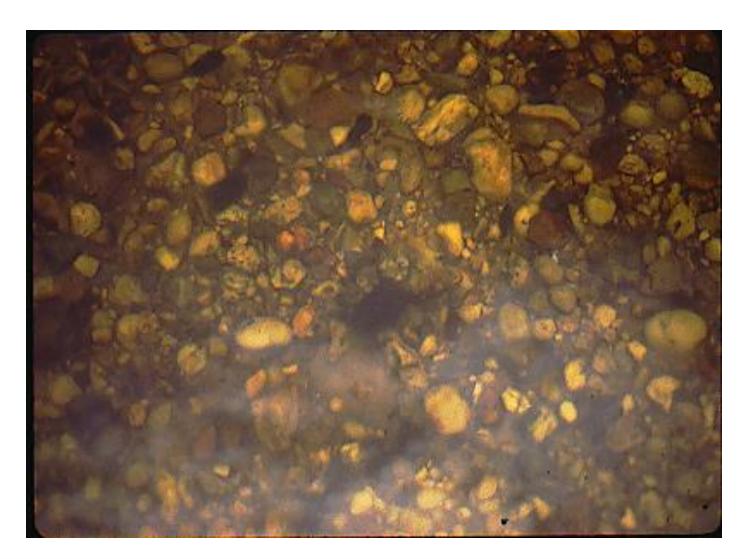






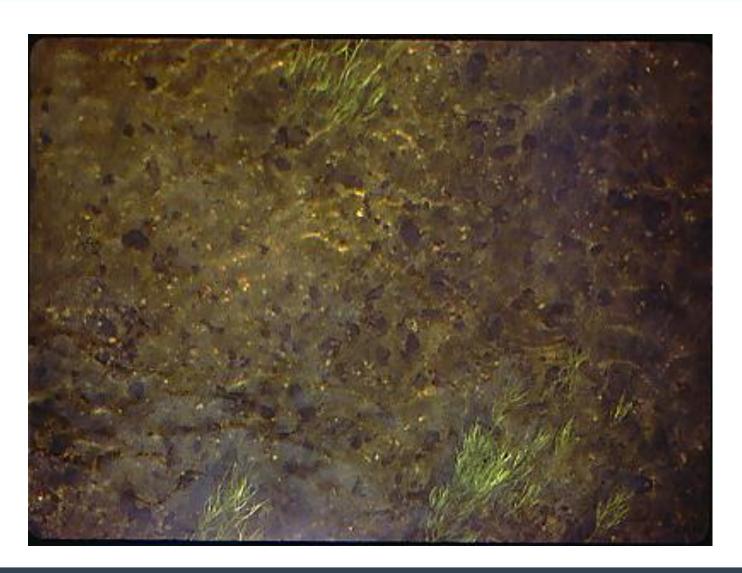






















Percent Shading – Rated based on degree and duration of shading at a site throughout the day

7. Shading^(g)
Percentage of segment that is shaded (duration is considered in scoring). 0% = fully exposed to sunlight all day in summer; 100% = fully and densely shaded all day in summer



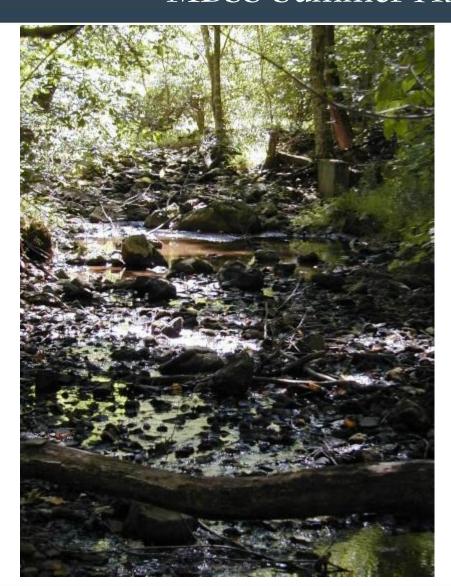




100%



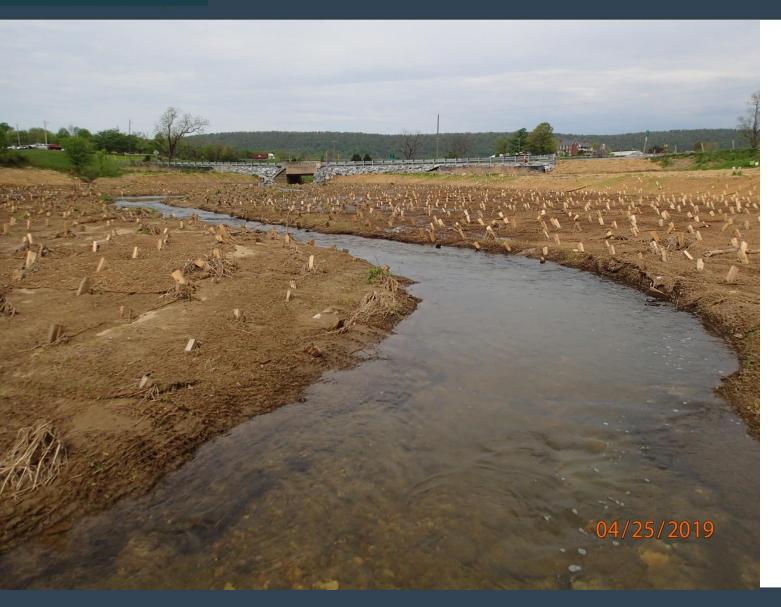




75%







0%





MBSS Habitat Certification Data Sheet

APPLICANT:	ORGANIZATION:	DATE:
BANK EROSION Left Bank Right Bank Extent (m) Severity 0 - none 1 - min 2 - mod 3 - severe BAR FORMATION & SUBSTRATE Cobble Gravel 1 - min 2 - mod 3 - severe Sitt/Clay	HABITAT ASSESSMEN	RIPARIAN VEGETATION (facing upstream) LEFT BANK RIGHT BA Width (50m max) Adjacent Land Cover Vegetation Type Buffer Breaks (Y/N) LEFT BANK RIGHT BA Storm Drain Tile Drain Impervious Drainage Gully Orchard Crop Pasture New Construction Directors New Construction Directors
Run/Glide Deep Pool (>= 0.5m) Shallow Pool (< 0.5m) Maximum Depth (cm) Woody Debris	Silt/Clay Beaver Pon- Cobble Overhead C Bedrock Undercut Ba Orange Floo	Gravel Road d Raw Sewage Railroad Buffer Break Types (M = minor; S = severe)
No. of Instream Woody Debris		nce of Channel Straightening or Dredging (Y/N)
No. of Dewatered Woody Debris	TYPE	EXTENT (m) LEFT BANK BOTTOM RIGHT BANK
No. of Instream Rootwads	Concrete	
No. of Dewatered Rootwads	Gabion Rip-Rap	
COMMENTS:	Earthen Berm Dredge Spoil Off Channel Pipe Culvert	N/A NA

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
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- Channelization





	M CHARACTER = Present	E = Extensive
Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
Maximum Depth (cm)		Orange Floc





MBSS Habitat Certification Data Sheet

APPLICANT:	ORGANIZATION:_	DATE:
BANK EROSION Left Bank Right Ban Extent (m)	1. Instream Habitat (0-20)	(facing upstream)
Severity 0 - tone 2 - mod 3 - severe Average Height (m) BAR FORMATION & SUBSTRATE	2. Epifaunal Substrate (0-20) 3. Velocity/Depth Diversity (0-20) 4. Pool/Glide/Eddy Quality (0-20) Extent (m) 5. Riffle/Run Quality (0-20)	LEFT BANK RIGHT BANK Width (50m max) Adjacent Land Cover Vegetation Type
Severity	el 6. Embeddedness (%)	Buffer Breaks (Y/N) LEFT BANK RIGHT BANK Storm Drain Tile Drain Impervious Drainage Gully
A = Absent P Braided Riffle Run/Glide Deep Pool (>= 0.5m) Shallow Pool (< 0.5m) Maximum Depth (cm)	= Present E = Extensive Gravel Boulder >2m Sand Boulder <2m Silt/Clay Beaver Pond Cobble Overhead Co Bedrock Undercut Bar Orange Floc	Wer Railroad Buffer Break Types
Woody Debris No. of Instream Woody D	ehris	ANNELIZATION nce of Channel Straightening or Dredging (Y/N)
No. of Dewatered Woody No. of Instream Rootwad No. of Dewatered Rootwa COMMENTS:	Concrete	EXTENT (m) LEFT BANK BOTTOM RIGHT BANK

MBSS Summer Habitat Data Sheet

- Bank Erosion
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Woody Debris No. of Instream Woody Debris No. of Dewatered Woody Debris No. of Instream Rootwads No. of Dewatered Rootwads

Large Woody Debris

- 10 cm diameter
- 1.5 m long

Rootwads

- 15 cm DBH

Instream

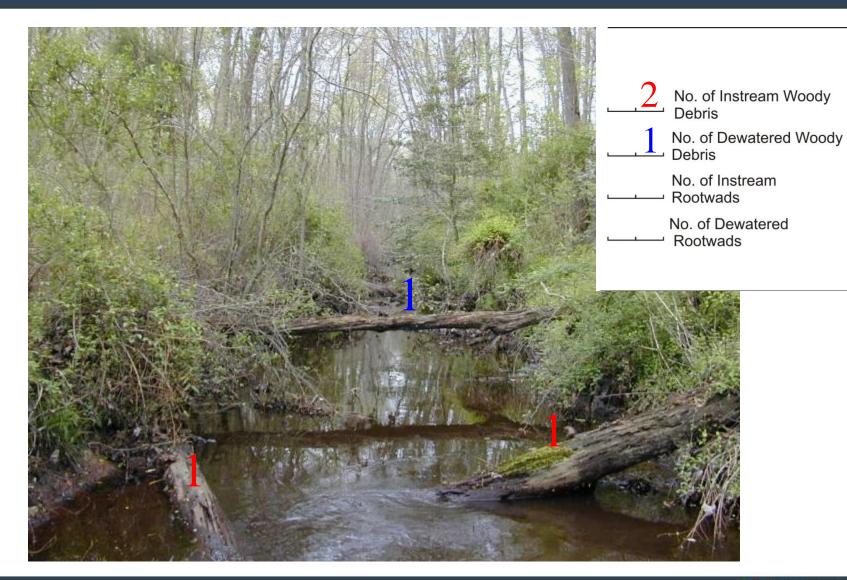
- In direct contact with water

Dewatered

 Potential to enter stream

















MBSS Habitat Certification Data Sheet

APPLICANT:	ORGANIZATION:			DATE:		
BANK EROSION Left Bank Right Bank Extent (m)		AT ASSESSMEN			IAN VEGETATION (IAN VEGETATION)	ΓΙΟΝ
Severity	3. Velocity/Depth D	Prate (0-20)	Width (5	LE 0m max)	EFT BANK	RIGHT BA
verage leight (m) BAR FORMATION &	Extent (m	Quality (0-20)	Adjacen Vegetati	t Land Cover on Type		
SUBSTRATE Severity Cobble 0 - none Gravel 1 - min Gravel 2 - mod Sand Silt/Clay	6. Embeddedness	(%)	Storm Tile Dr.	Drain	FT BANK	RIGHT B.
	CHARACTER Present E Gravel Sand	= Extensive Boulder >2m Boulder <2m	Gully Orchar Crop Pastur	d e onstruction ad		
Run/Glide Deep Pool (>= 0.5m) Shallow Pool (< 0.5m)	Silt/Clay Cobble Bedrock	Beaver Pond Overhead Co Undercut Bar	Raw S Railroa	ewage	Buffer Break (M = minor; S =	
Maximum Depth (cm) Woody Debris		Orange Floc	ANNELIZA	TION		
No. of Instream Woody Debri	s				r Dredging (Y/N)	
No. of Dewatered Woody De	- AV - CA		LEFT BANK	EXTENT (m) RIGHT BANK	7
No. of Instream Rootwads No. of Dewatered Rootwads		Concrete Gabion	III		IIIII DANK	
COMMENTS:	Dredge Sp	Rip-Rap Earthen Berm poil Off Channel		N/A N/A		
	_	Pipe Culvert				

MBSS Summer Habitat Data Sheet

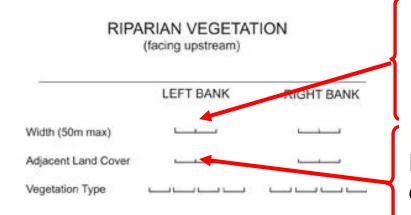
- Bank Erosion
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MARYLAND DEPARTMENT OF NATURAL RESOURCES

MBSS Summer Habitat



Measure the average width of vegetated riparian buffer on each side of stream. (Max width = 50m)

No vegetation = No Buffer

Record the dominant type of land cover directly adjacent to the riparian buffer.

If a non-buffer landcover is encountered within 50m of the stream/site, the buffer ends: record average buffer width to that location and adjacent land cover as the appropriate type encountered

Riparian Buffer vegetation

Adjacent land cover

Riparian Buffer Zone / Adjacent Land Cover Types

FR = Forest

OF = Old Field

EM = Emergent Vegetation

LN = Mowed Lawn

TG = Tall Grass

LO = Logged Area

SL = Bare Soil

RR = Railroad

PV = Paved Road

PK = Parking Lot/ Industrial/

Commerical

GR = Gravel Road

DI = Dirt Road

PA = Pasture

OR = Orchard

CP = Cropland

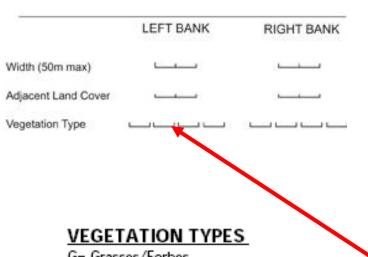
HO = Housing





RIPARIAN VEGETATION

(facing upstream)



G= Grasses/Forbes

R= Regen Deciduous/Shrubs (<4'dbh)

Y= Young Deciduous (4-12" DBH)

M= Mature Deciduous (12-24" DBH

O= Old Deciduous (>24" DBH)

A= Regen Coniferous (<4" DBH)

B= Young Coniferous (4-12" DBH)

C= Mature Coniferous (12-24' DBH

D= Old Coniferous (>24" DBH)

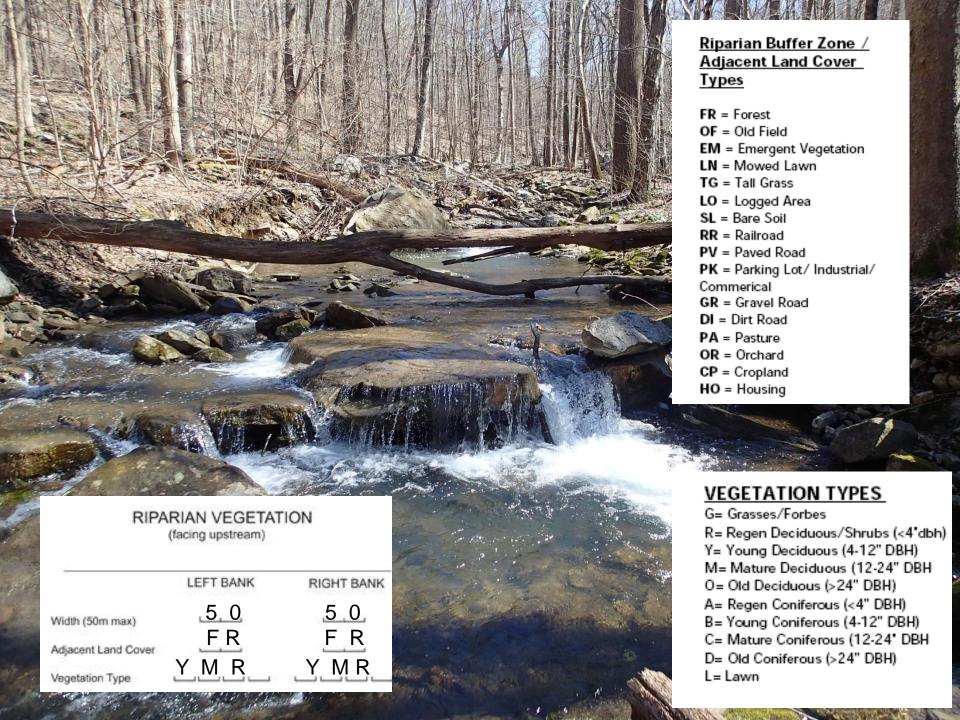
L= Lawn

Record the dominant vegetation in the buffer List vegetation type in order of dominance

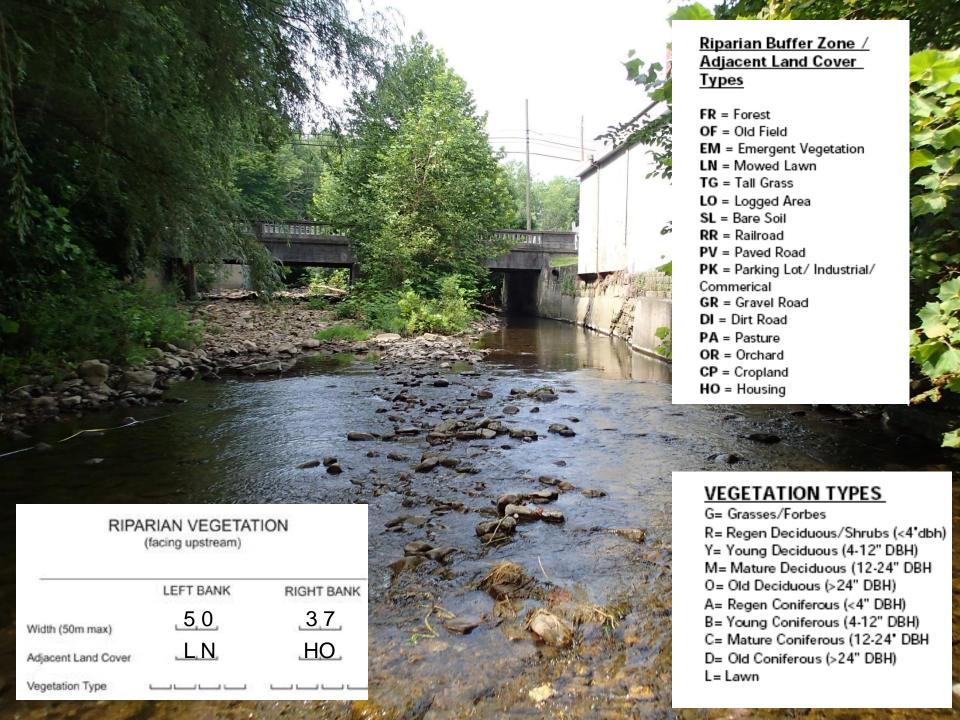
Dominance based on combination of stem density and canopy density.



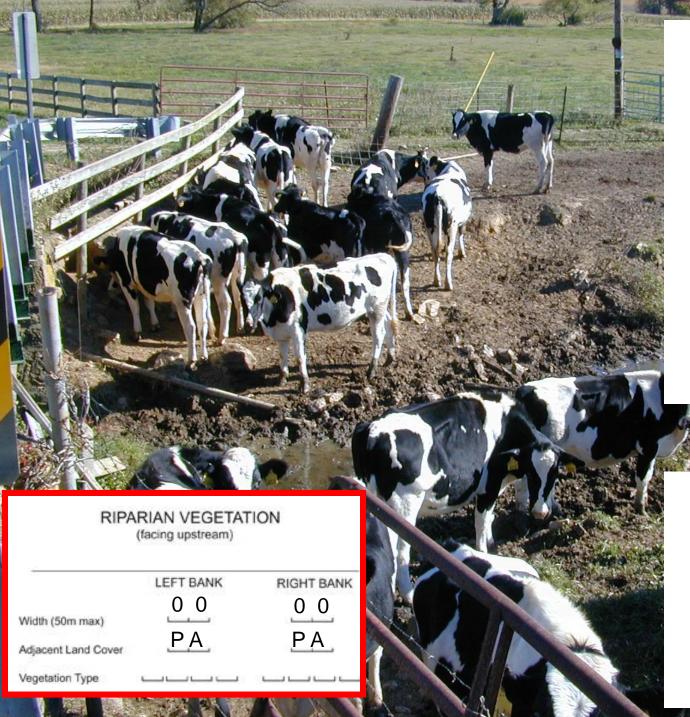












Riparian Buffer Zone / Adjacent Land Cover Types

FR = Forest

OF = Old Field

EM = Emergent Vegetation

LN = Mowed Lawn

TG = Tall Grass

LO = Logged Area

SL = Bare Soil

RR = Railroad

PV = Paved Road

PK = Parking Lot/ Industrial/

Commerical

GR = Gravel Road

DI = Dirt Road

PA = Pasture

OR = Orchard

CP = Cropland

HO = Housing

VEGETATION TYPES

G= Grasses/Forbes

R= Regen Deciduous/Shrubs (<4'dbh)

Y= Young Deciduous (4-12" DBH)

M= Mature Deciduous (12-24" DBH

O= Old Deciduous (>24" DBH)

A= Regen Coniferous (<4" DBH)

B= Young Coniferous (4-12" DBH)

C= Mature Coniferous (12-24' DBH

D= Old Coniferous (>24" DBH)

L= Lawn



Width (50m max) Adjacent Land Cover Vegetation Type Buffer Breaks (Y/N) LEFT BANK RIGHT BANK Storm Drain Tile Drain Impervious Drainage Gully Orchard Crop Pasture New Construction Dirt Road		LEFT BANK	RIGHT BANK
Vegetation Type Buffer Breaks (Y/N) LEFT BANK RIGHT BANK Storm Drain Tile Drain Impervious Drainage Gully Orchard Crop Pasture New Construction	Width (50m max)		
Vegetation Type Buffer Breaks (Y/N) LEFT BANK RIGHT BANK Storm Drain Tile Drain Impervious Drainage Gully Orchard Crop Pasture New Construction	Adjacent Land Cover		
Storm Drain Tile Drain Impervious Drainage Gully Orchard Crop Pasture New Construction			
Tile Drain Impervious Drainage Gully Orchard Crop Pasture New Construction	Buffer Breaks (Y/N)	LEFT BANK	RIGHT BANK
Impervious Drainage Gully Orchard Crop Pasture New Construction	Storm Drain	<u> </u>	
Gully Orchard Crop Pasture New Construction	Tile Drain		
Orchard Crop Pasture New Construction	Impervious Drainag	je	
Crop Pasture New Construction	Gully		
Pasture New Construction	Orchard		
New Construction	Crop		
	Pasture		
Dirt Road	New Construction		
	Dirt Road		
Gravel Road	Gravel Road		
Raw Sewage			
Railroad	Railroad		

Buffer Breaks

Note any functional breaks in the riparian buffer on each side of the stream.

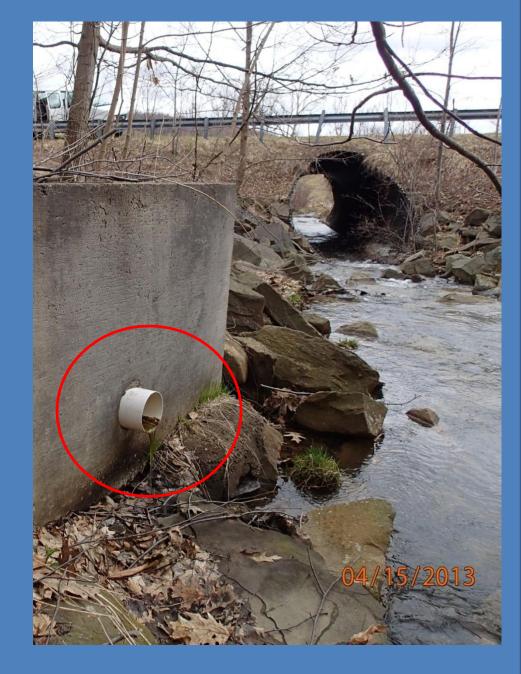
Indicate the type and severity of break.

Buffer Break = anything that conveys runoff to effectively bypass an intact riparian buffer













APPLICANT:	ORGANIZATION:	DATE:
BANK EROSION Left Bank Right Bank Extent (m) Severity 0 none 1 mone 2 mod 3 - severe Average Height (m)	HABITAT ASSESSMENT	RIPARIAN VEGETATION (facing upstream) LEFT BANK RIGHT BANI Width (50m max) Adjacent Land Cover Vegetation Type
	5. Riffle/Run Quality (0-20) Extent (m) 6. Embeddedness (%) 7. Shading (%) CHARACTER Present E = Extensive Gravel Boulder >2m Sand Boulder <2m Sitt/Clay Beaver Pond Cobble Overhead Coverness Covern	Buffer Break Types
Woody Debris No. of Instream Woody Debr No. of Dewatered Woody De No. of Instream Rootwads No. of Dewatered Rootwads COMMENTS:	Evidenc	e of Channel Straightening or Dredging (Y/N) EXTENT (m) EFT BANK BOTTOM RIGHT BANK N/A N/A N/A N/A

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
- Habitat Assessment
- Stream Character
- Woody Debris
- Riparian Vegetation
- Channelization





CHANNELIZATION

Evidence of Channel Straightening or Dredging (Y/N)

TYPE		EXTENT (m	1)
	LEFT BANK	воттом	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			-

- Survey site for evidence of channel dredging or straightening and
- Indicate presence (Y) or absence (N).
- Indicate the type and linear extent in meters for each bank and for the stream bottom.







Dredge Spoils



Concrete Channel







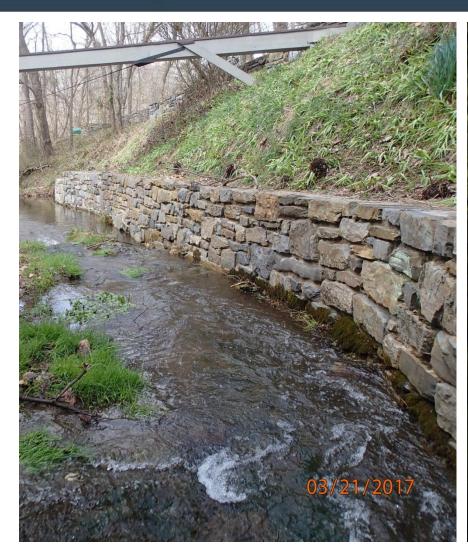


Gabion

Rip rap









Stone / Imbricated Wall

Culvert



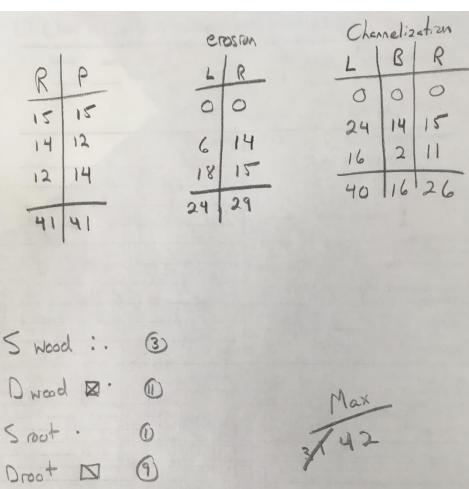


MARYLAND DEPARTMENT OF NATURAL RESOURCES

MBSS Summer Habitat

MBSS Habitat Certification Data Sheet

•		-	
APPLICANT:	ORGANIZATION:	DATE:	
BANK EROSION Left Bank Right Bank	HABITAT ASSESSMENT	RIPARIAN VEGETATION (facing upstream)	
Extent (m)	1. Instream Habitat (0-20)		
Severity 0 = none	Epifaunal Substrate (0-20) Velocity/Depth Diversity (0-20)	LEFT BANK RIGHT BANK	RIP
1 = min 2 = mod 3 = severe	Velocity/Depth Diversity (0-20) Pool/Glide/Eddy Quality (0-20)	Width (50m max)	
Average Height (m)	Extent (m)	Adjacent Land Cover	12 12
BAR FORMATION & SUBSTRATE	5. Riffle/Run Quality (0-20)·····	Vegetation Type	14 12
Severity Cobble	Extent (m)·····	Buffer Breaks (Y/N) LEFT BANK RIGHT BANK	12 14
0 = none 1 = min 2 = mod 3 = severe Sand	6. Embeddedness (%)·····	Storm Drain	12 17
Silt/Clay	7. Shading (%)	Tile Drain Impervious Drainage	
Riffle	resent E = Extensive Gravel Boulder >2m Sand Boulder <2m Beaver Pond Cobble Overhead Cover Bedrock Undercut Bank Orange Floc	Orchard Crop Pasture New Construction Dirt Road Gravel Road Raw Sewage Railroad Buffer Break Types (M = minor; S = severe)	5 wood
Woody Debris No. of Instream Woody Debris	Evidence	NELIZATION of Channel Straightening or Dredging (Y/N)	Dwad D
No. of Dewatered Woody Debris	1112	EXTENT (m) T BANK BOTTOM RIGHT BANK	
No. of Instream Rootwads	Concrete		S not.
No. of Dewatered Rootwads	Gabion		- de manuel de
COMMENTS:	Rip-Rap Earthen Berm Dredge Spoil Off Channel Pipe Culvert	N/A N/A	Droot I





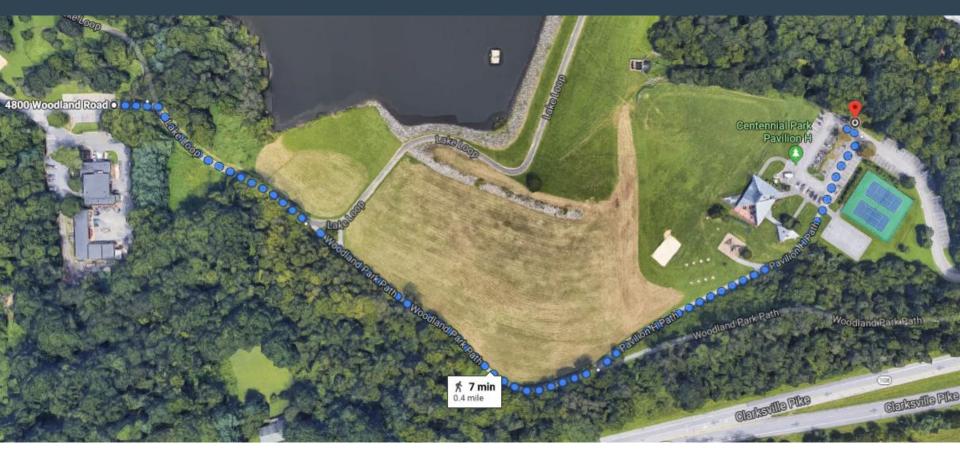


MBSS Habitat Certification Data Sheet APPLICANT: ORG/ DATE: HABITAT ASSESSMENT RIPARIAN VEGETATION BANK EROSION (facing upstream) Left Bank Right Bank Instream Habitat (0-20). Extent (m) 2. Epifaunal Substrate (0-20)-LEFT BANK RIGHT BANK Severity_ 0 - none 1 - min 3. Velocity/Depth Diversity (0-20) Width (50m max) 2 - mod 3 = severe Pool/Glide/Eddy Quality (0-20) Adjacent Land Cover Extent (m) --Vegetation Type **BAR FORMATION &** 5. Riffle/Run Quality (0-20) SUBSTRATE Buffer Breaks (Y/N) Cobble Extent (m)-LEFT BANK RIGHT BANK 0 - none Gravel 1 = min 2 = mod 6 Embeddedness (%).... Sand Storm Drain Tile Drain Silt/Clay Shading (%)... Impervious Drainage Gully STREAM CHARACTER Orchard A = Absent P = Present F = Extensive Crop Pasture Braided Gravel Boulder >2m New Construction Dirt Road Riffle Boulder <2m Sand Gravel Road Run/Glide Silt/Clay Beaver Pond Raw Sewage Deep Pool (>= 0.5m) Overhead Cover Buffer Break Types Shallow Pool (< 0.5m) Bedrock Undercut Bank (M = minor: S = severe) Orange Floc Maximum Depth (cm) Woody Debris CHANNELIZATION No. of Instream Woody Debris Evidence of Channel Straightening or Dredging (Y/N) No. of Dewatered Woody Debris TYPE EXTENT (m) LEFT BANK воттом RIGHT BANK No of Instream Rootwads Concrete No. of Dewatered Rootwads Gabion Rip-Rap Earthen Berm COMMENTS: Dredge Spoil Off Channel NA Pipe Culvert

Make Comments!

- Any impacts
 associated with habitat
 conditions at a site
 should be documented
 in the comments section
- Subjective nature of habitat data makes comments valuable





Email with link to directions will be sent to the entire MBSS training group later this morning





Midpoint of audit site from left bank — Howard Co. park land *Private property on RB beyond sewer line ROW

- Please do not venture beyond sewer line ROW on RB





Question 4 Question 17

